

We claim:

1. A process for the meso-selective preparation of ansa-metallocene complexes of the formula (I),

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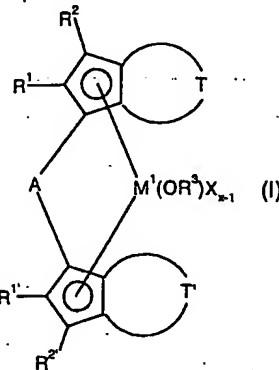
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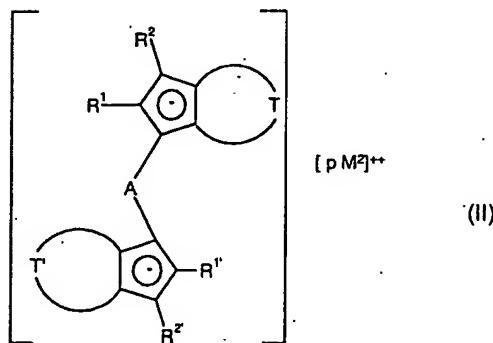
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which comprises reacting a ligand starting compound of the formula (II)



with a transition metal compound of the formula (III)

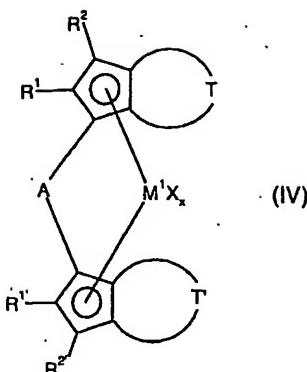


where

35  $R^1, R^{1'}$  are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms,

$R^2, R^{2'}$  are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms,

- 5            R<sup>3</sup> is a bulky organic radical which has at least 3 carbon atoms, is bound to the oxygen atom via a nonaromatic carbon or silicon atom and may be substituted by halogen atoms or further organic radicals having from 1 to 20 carbon atoms and may also contain heteroatoms selected from the group consisting of Si, N, P, O and S,
- 10          T, T' are identical or different and are each a divalent organic group which has from 1 to 40 carbon atoms and together with the cyclopentadienyl ring forms at least one further saturated or unsaturated, substituted or unsubstituted ring system having a ring size of from 5 to 12 atoms, where T and T' may contain the heteroatoms Si, Ge, N, P, As, Sb, O, S, Se or Te within the ring system fused to the cyclopentadienyl ring,
- 15          A is a bridge consisting of a divalent atom or a divalent group,
- 20          M<sup>1</sup> is an element of group 3, 4, 5 or 6 of the Periodic Table of the Elements or the lanthanides,
- the radicals X are identical or different and are each an organic or inorganic radical which is able to be replaced by a cyclopentadienyl anion,
- 25          x is a natural number from 1 to 4,
- M<sup>2</sup> is an alkali metal, an alkaline earth metal or a magnesium monohalide fragment,
- 30          p is 1 in the case of doubly positively charged metal ions or 2 in the case of singly positively charged metal ions or metal ion fragments,
- LB is an uncharged Lewis base ligand,
- and
- y is a natural number from 0 to 6.
- 35 2. A process as claimed in claim 1, wherein the metallocene complex of the formula (I) is converted into an ansa-metallocene complex of the formula (IV)



where

the variables and indices have the same meanings as in the formula (I), by reaction with suitable elimination reagents in a subsequent reaction step.

15 3. A process as claimed in claim 1 or 2, wherein

$R^1, R^{1'}$  are identical or different and are each  $C_1-C_{10}$ -alkyl,

$R^2, R^{2'}$  are each hydrogen,

20  $T, T'$  are identical or different and are each an unsubstituted 1,3-butadiene-1,4-diyl group or a 1,3-butadiene-1,4-diyl group substituted by from 1 to 4 radicals  $R^4$ , where  $R^4$  can be identical or different and are organic radicals having from 1 to 40 carbon atoms,

25 A is ethylene, substituted ethylene or substituted silylene,

and the variables  $R^3, M^1, X, M^2$  and LB and also the indices x, p and y are as defined in claim 1.

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4. A process as claimed in any of claims 1 to 3, wherein

$R^3$  is an alkyl radical which is branched in the  $\alpha$  position and has from 4 to 40 carbon atoms and may be substituted by halogen atoms or organic radicals having from 1 to 10 carbon atoms,

$M^1$  is Ti, Zr or Hf,

X is halogen,

I B is a cyclic or acyclic ether or diether.

15 . . . and

v is 1 or 2.

5. A process as claimed in any of claims 1 to 4, wherein

20 M<sup>2</sup> is Li, Na, K, MgCl, MgBr, MgI or Mg.

- ## 6. The use of a transition metal compound of the formula (III)

$$25 \quad (LB)_y M^1(OR^3) X_{x+1} \quad (III)$$

for preparing ansa-metallocene complexes.

### 7 A transition metal compound of the formula

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$$(LB)_y M^1(OR^3) X_{x+1} \quad (III)$$

where the variables and indices are as defined in claim 1 or claim 4.

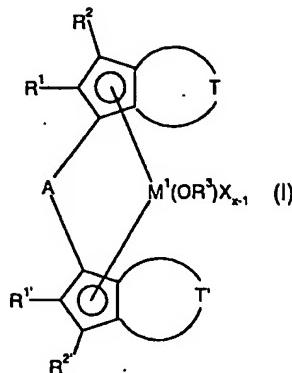
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## 8. The use of a metallocene complex of the formula (I) as set forth in claim 1

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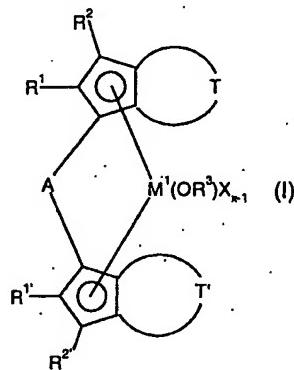


as intermediate for preparing ansa-metallocene complexes of the formula (IV), where the variables and indices are as defined in any of claims 1, 3 and 4.

## 15 9. An ansa-metallocene complex of the formula (I) as set forth in claim 1

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30 where the variables and indices are as defined in any of claims 1, 2 and 4.

35 10. The use of an ansa-metallocene complex of the formula (I) prepared by a process as claimed in claim 1 as constituent of a catalyst system for the polymerization of olefins.

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